ESRI California | Hawaii | Nevada

Regional User Group Conference

February 3–4, 2010 · ESRI · Redlands, CA

Best Practices for Creating Web Maps
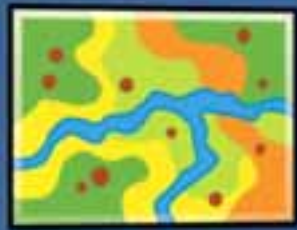
Brian Chong

Justin Fan

Agenda

- **Overview of web maps**

- **Designing maps for the web**

- **Develop effective web maps**

What is a Web Map?

- **Contains one or more GIS services**

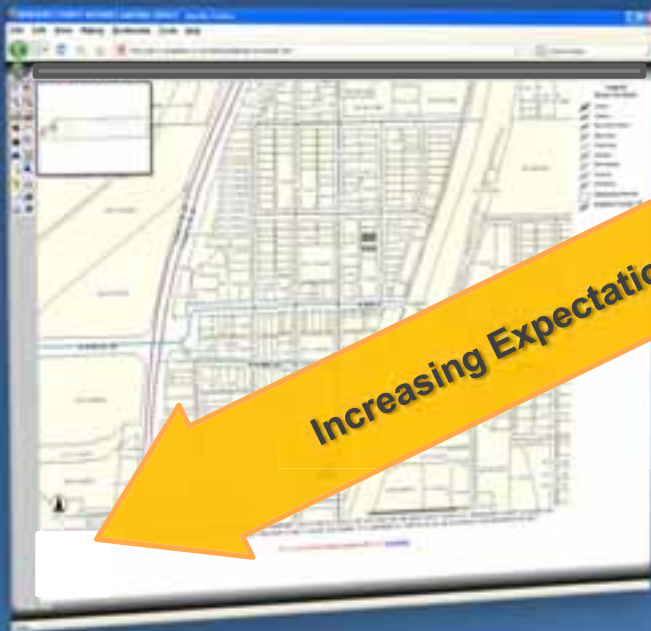- **Integrated in a web application**
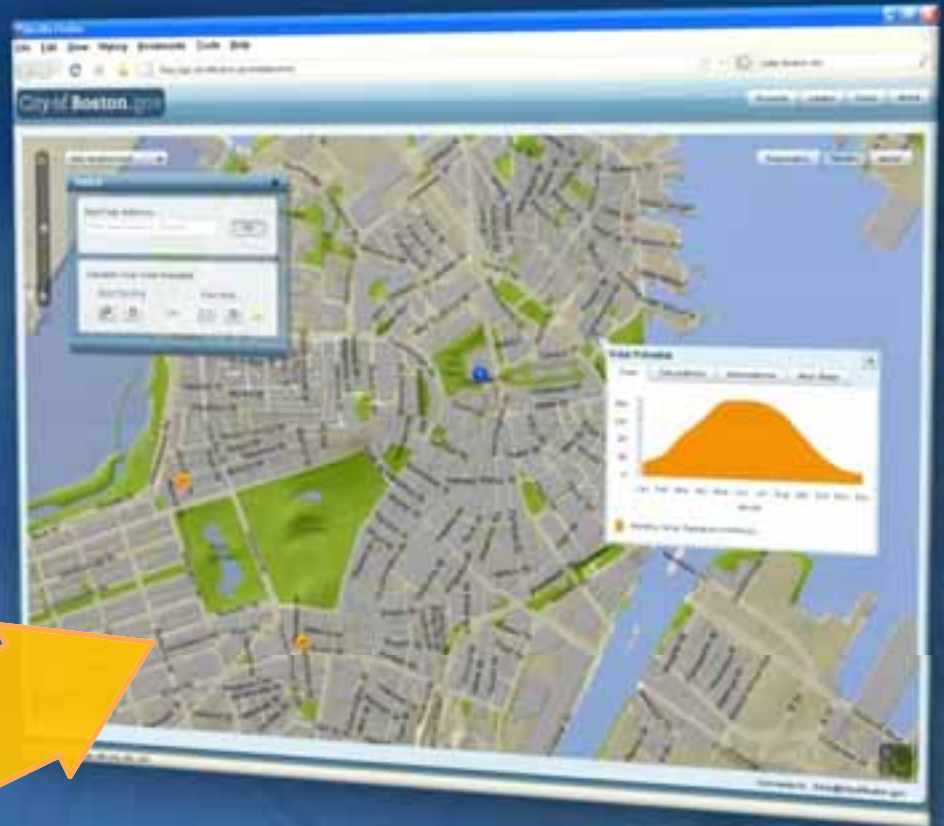
. . .accomplishes a focused, meaningful task

Growing expectations
New era of Web maps

- **Consumer mapping sites have raised the bar**

- **"One-size fits all" Web map will not work**

Increasing Expectations

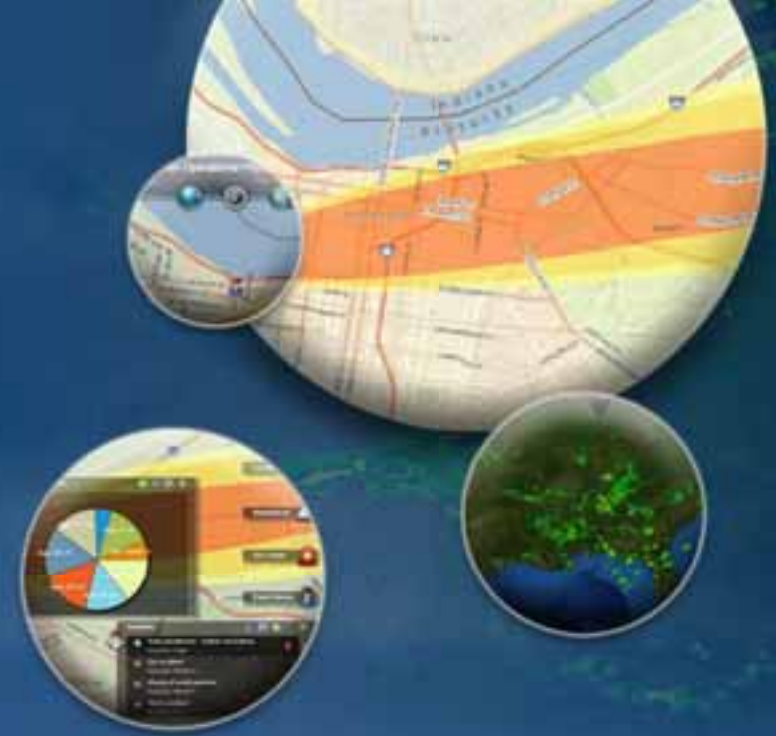# Change the way we design
High quality user experience

- **85% of visitors abandon a new site due to poor design *Gartner**

- **40% of repeat visitors do not return due to a negative experience *Zona Research**

. . .usability trumps features

A Great Web Map is..

- Easy and intuitive to use

- Responsive and designed for the end user

- Extremely focused

. . .meets users expectations

Demonstration

Considerations for your Web map
Careful Planning

- **What is the purpose of the application?**

- **What business problem will it solve?**

- **Who are the end users?**

- **Will this be an internal or public-facing Web site?**

- **Which data do you need to include?**

Designing Maps for the Web
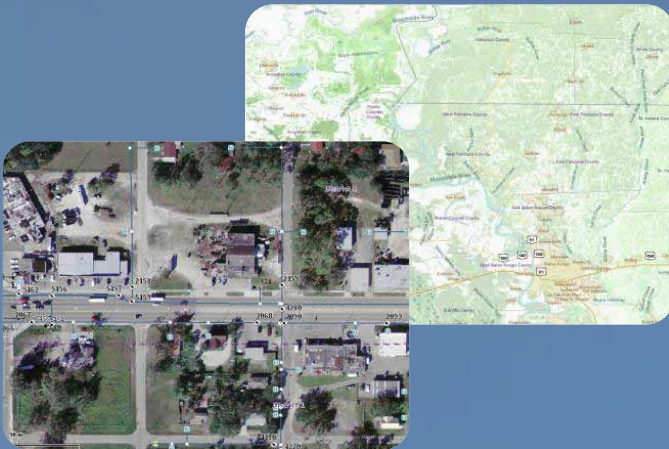
Best Practices and Patterns

Organize Data

Basemaps

Geographic frame of reference

Contain static vector and raster data

Reusable in multiple applications

Operational Layers

Show a focused item of interest
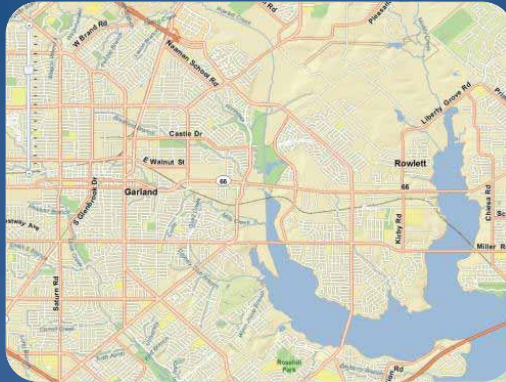
Support functionality of the application

Displayed on top of basemap

Basemaps
Provide geographic reference

- **Consider using ArcGIS Online**

Street Map

Topo Map

Imagery

City Map

- **Use your own resources – your authoritative data**

Map templates
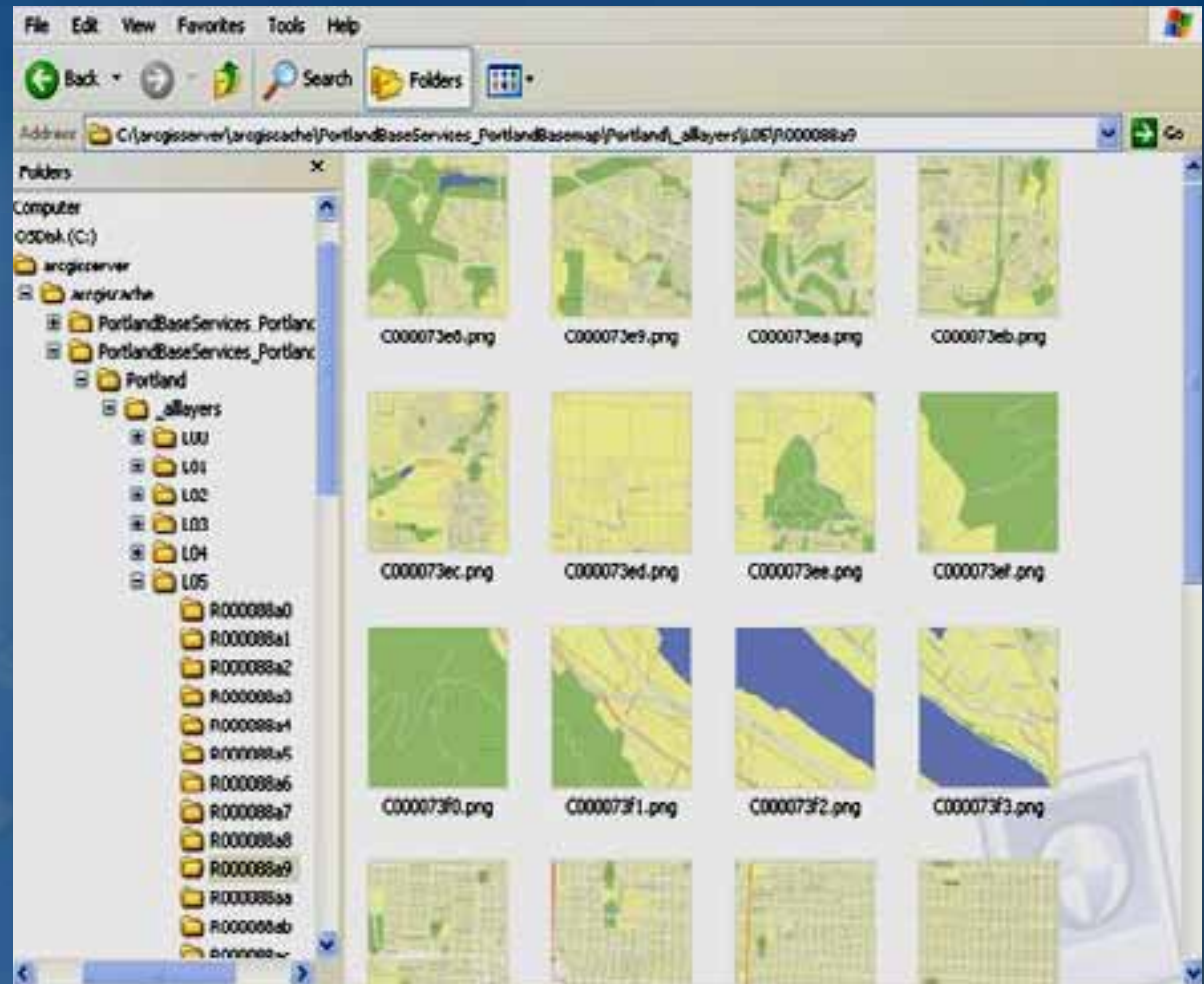## *Excellent starting point*

- **Transfer of map design**

- **Captures best practices**

- **Focused design**

. . .for you to create useful and attractive maps

Benefits of map caching

- **Best performance**

- **Improved scalability**

- **More options for cartography**

Working with a map cache
Best practices

- **Choose appropriate image output type**
  - Raster cache: JPEG (.JPG)
  - Vector cache: PNG

- **Match scale dependency levels with cache levels**

- **Use same projection for all services**

- **Create a test cache using a small area**
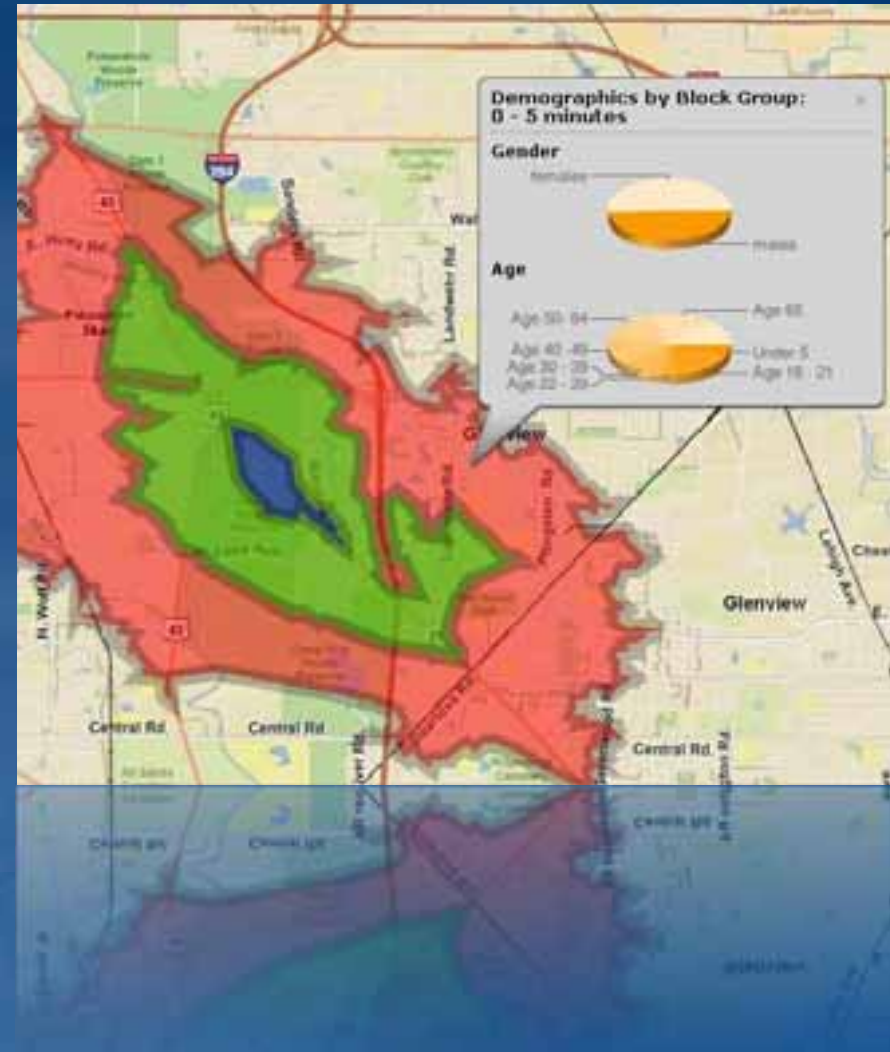
Operational layers
Application focus

- **Assets, incidents, work orders**

- **Query or computation results**

- **Result layers derived from geoprocessing**

Operational layer display
Choose the best option

- **Dynamic map layers**
  - **Real-time data**
  - **Frequently changing data**

- **Cached map layers**
  - **High volumes of traffic**
  - **Do not change often**

- **Information popups**

Optimized map services

- **High performance drawing engine**

- **Best performance and quality for dynamic maps**

- **Improve map caching performance**

- **Uses a map document (.MXD) to create a map service definition file (.MSD)**

Map (.mxd)   Map (.msd)

Map Service Publishing toolbar
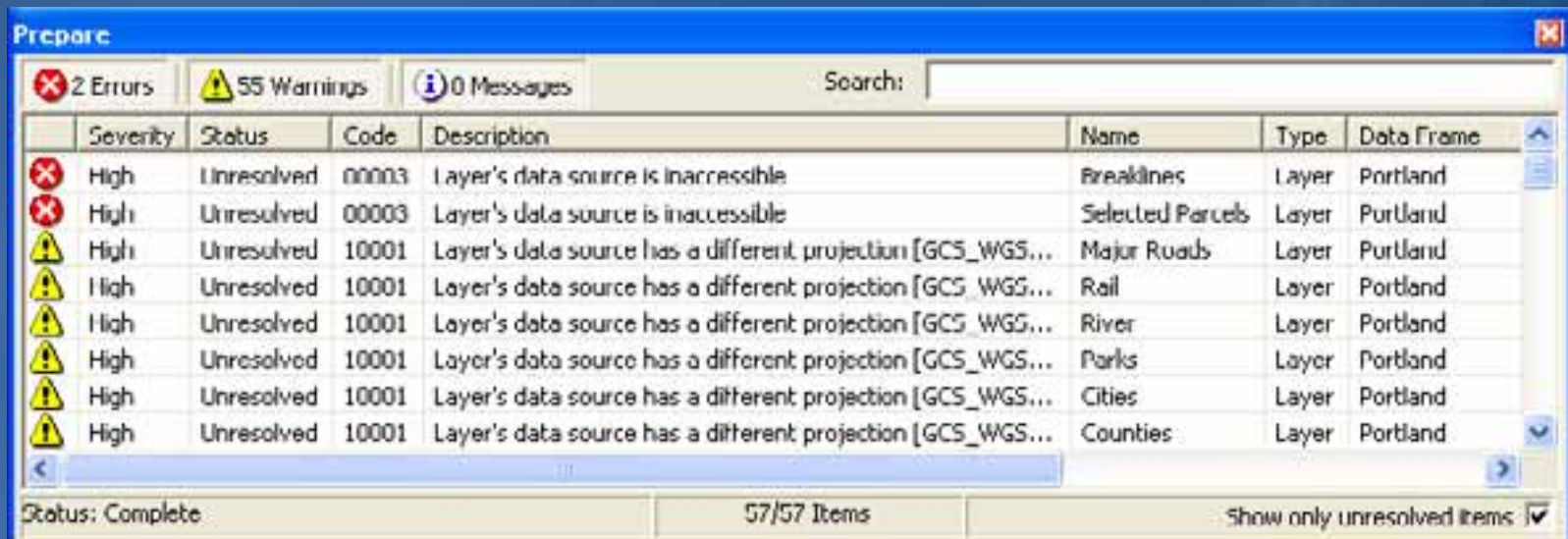
- **Identify layers or issues that may degrade performance**

- **Analyze and preview in ArcMap**
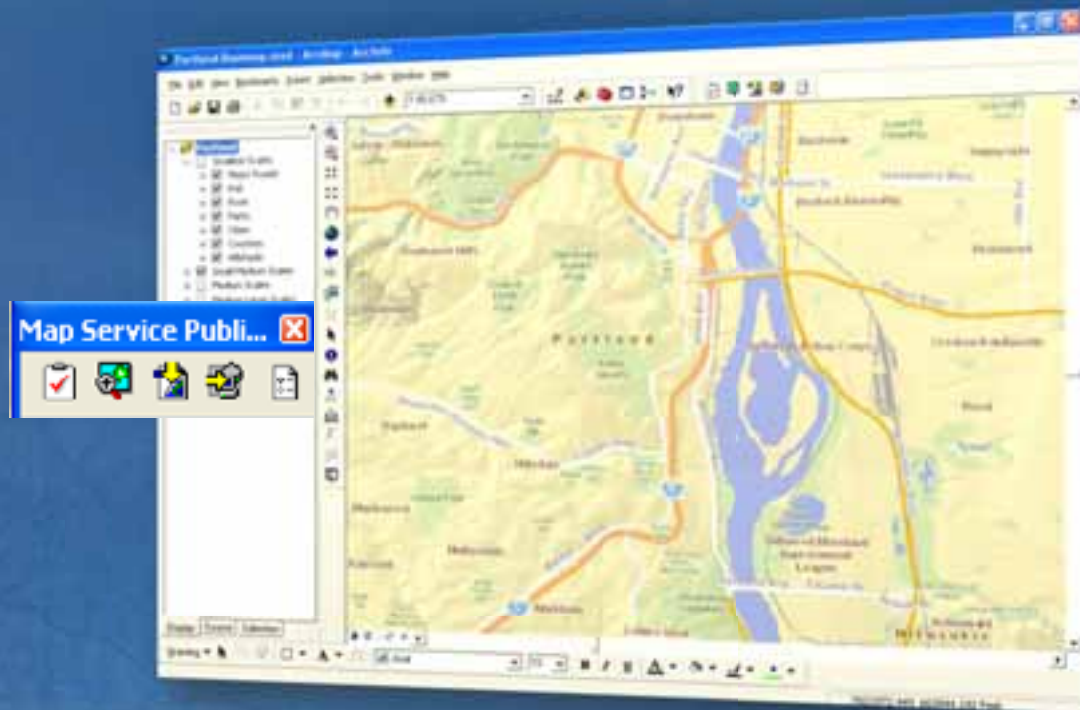
Analyze the map
Improve performance

- **Discover content affecting performance**

- **Review results: errors, warnings, and messages**

- **Preset solutions available in the analysis tool**
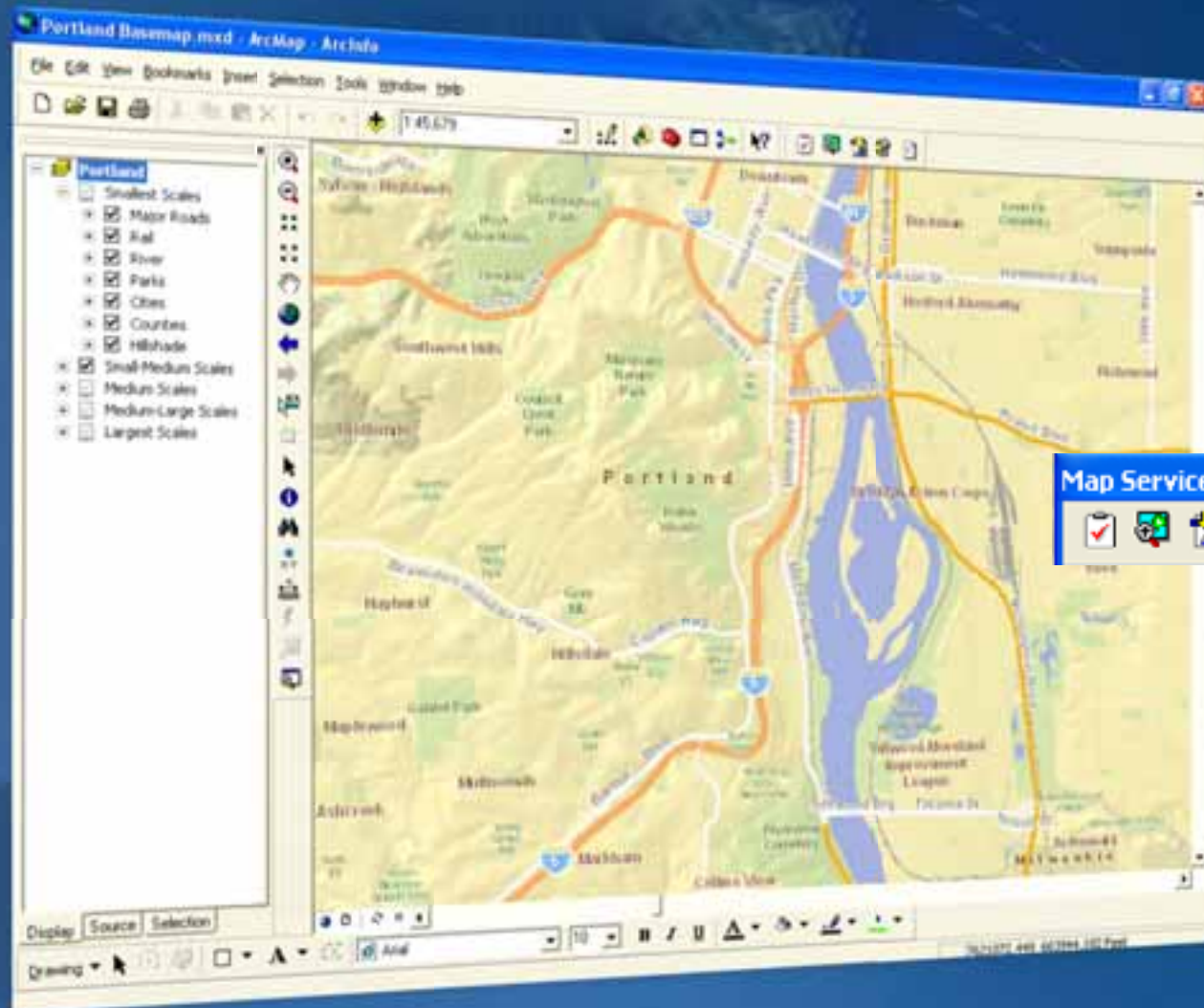
Preview the map
Improve performance

- **Assess drawing performance and graphic quality before publishing**

Demonstration
Map Service Publishing toolbar

Performance tips
Map documents

- Complex things do not scale — keep map documents as simple as possible

- Use common projection for all data layers

- Remove unused layers

- Use scale dependencies

- Avoid nested services

Performance tips
Database

- **Optimize and tune your database**

- **Use direct connect**

- **Avoid UNC paths for file-based data**

- **Use spatial and attribute indexes**

Publishing optimized map services
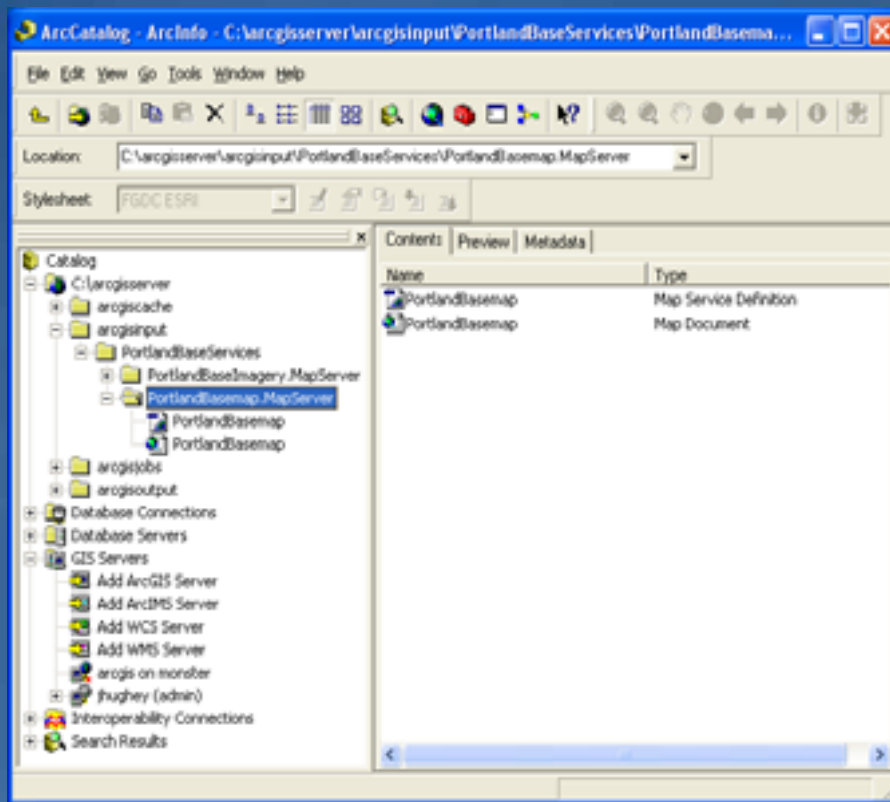## *Two options*

- **Desktop Users**
  - **Save map service as an MSD**
  - **Administrator publishes map service**

- **Server Administrators**
  - **Publish directly from ArcMap**
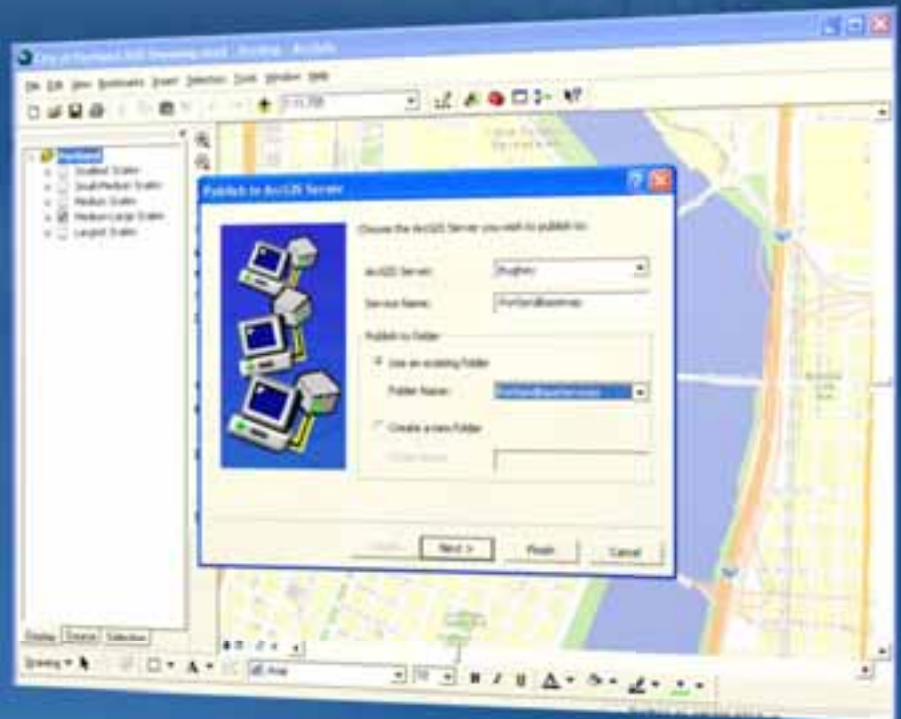
Managing optimized map services
Best practices

- **Store your MSD and MXD together**
  - **Do not delete the MXD**

Need to make changes?
- **Layer properties**
- **Layer cartography**
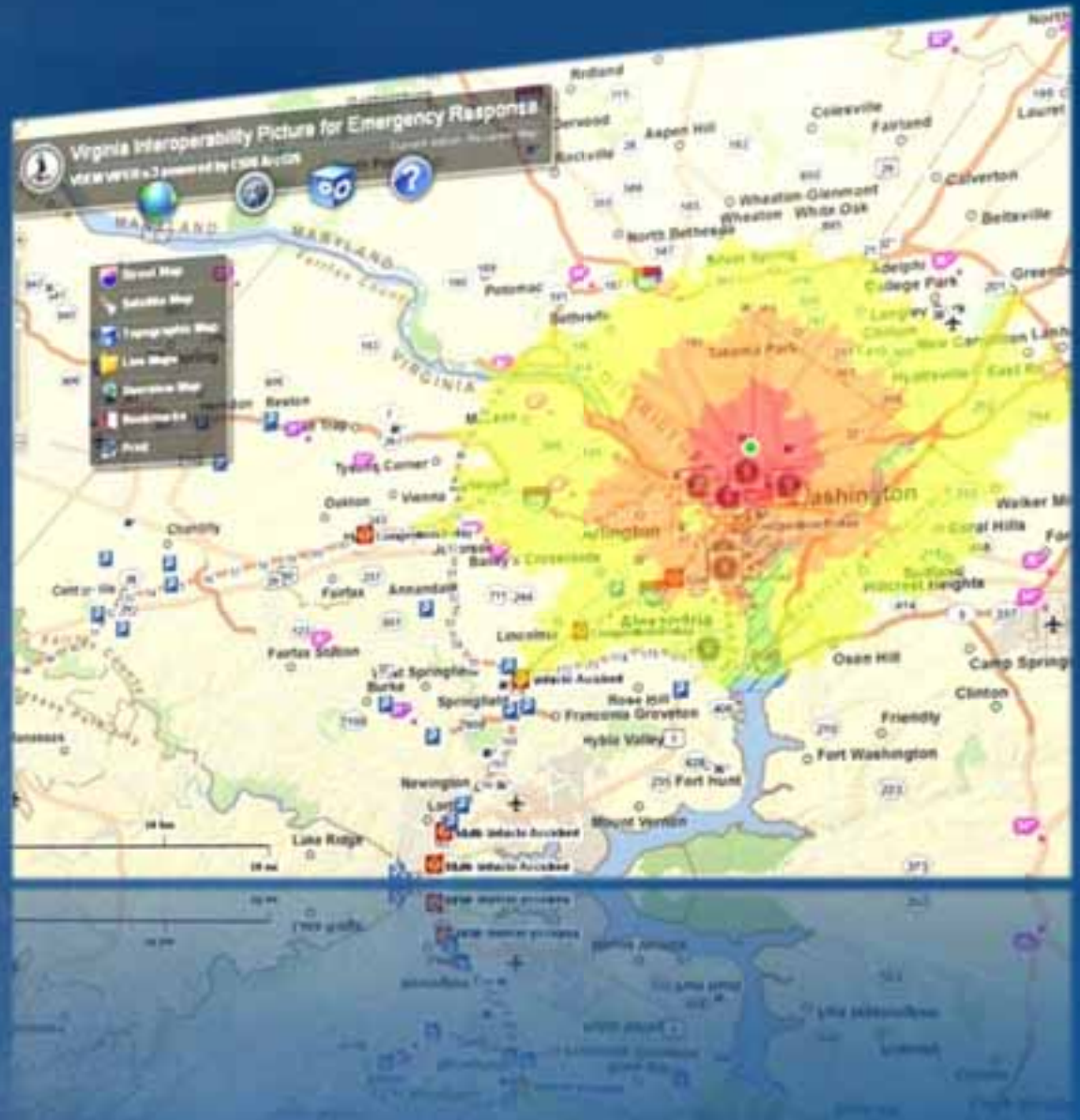- **Remove or add layer**

Change the original MXD
- **Resave the MSD**
- **Restart the service**

Develop effective Web Maps
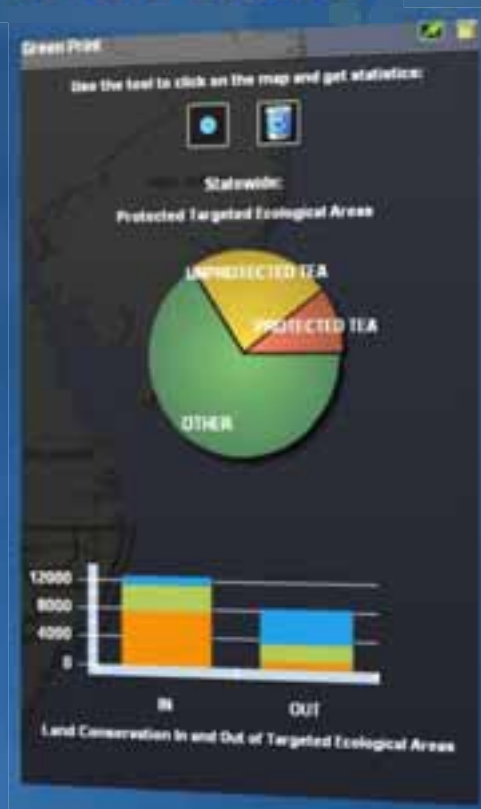
Building Web applications
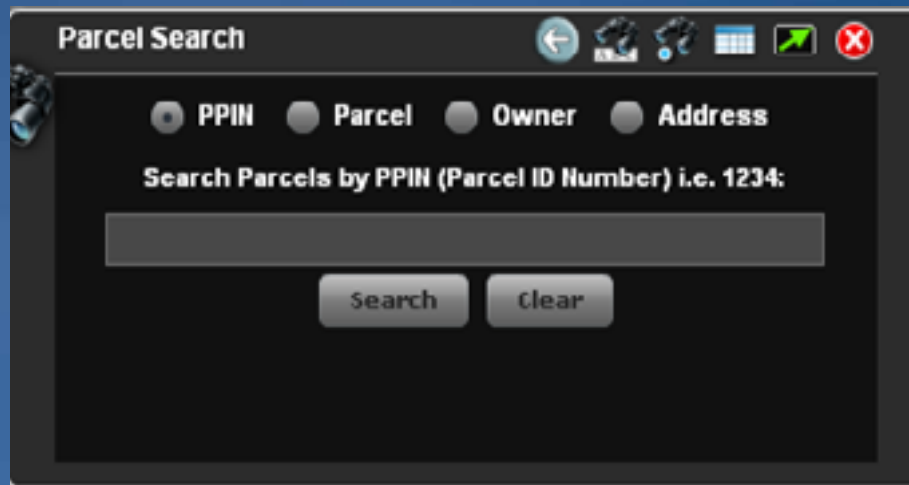*A systematic approach*

- **Map layers**

- **Tools and tasks**

- **Reporting**

Tools and tasks in Web applications
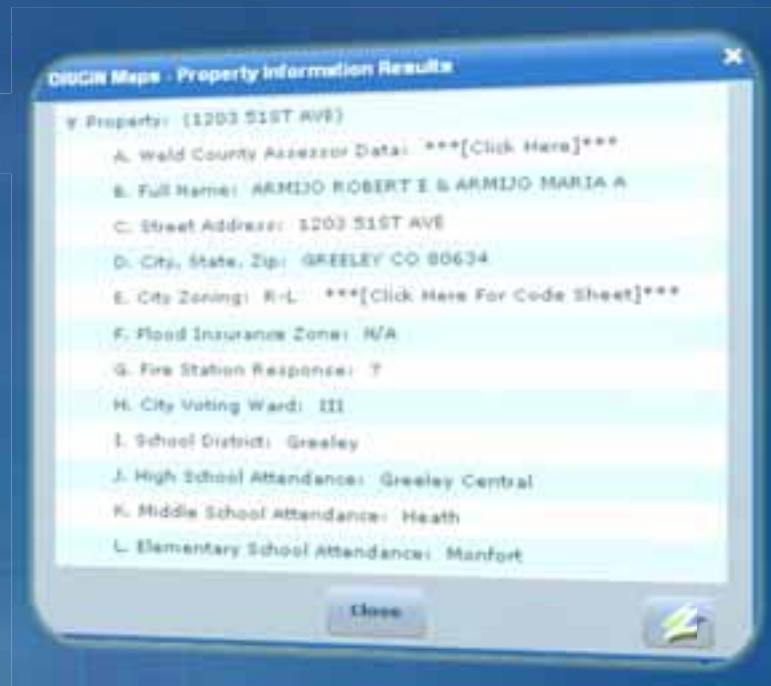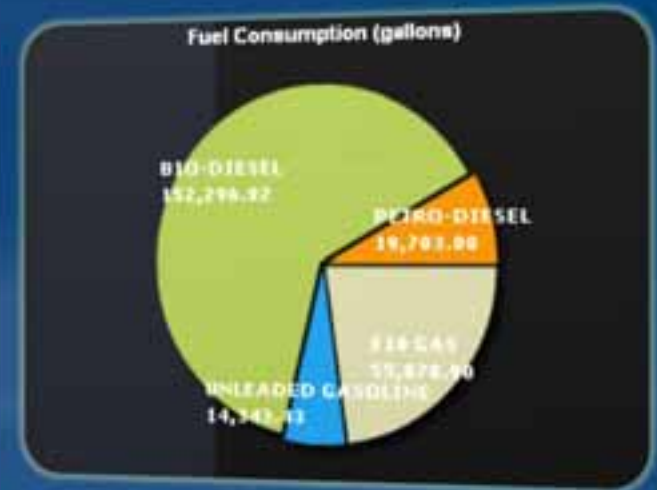*Best practices*

- **Design tools for end users**

- **Design tools for specific layers**

- **Functionality does not have to be a button on the toolbar**

Reporting information in Web applications
Best practices

- **Eliminate GIS terminology**

- **Target report to end user**

- **Choose best option**
  - **Map labels**
  - **Information popup**
  - **Results of geoprocessing task**
  - **Client-side charts**

Sample viewers
Jump start to application design

- **Configurable solutions**

- **Quick to deploy**

JavaScript

Flex

…10,000+ downloads!

Demonstration

Summary

- **Responsive – caching, optimized map service**

- **Well designed – map templates, sample viewer**

- **Focused – community resource center**

Training options
www.esri.com/training

- **Free Web-based training seminars**
  - *Authoring and Deploying Fast Web Maps*
  - *Getting started with Map Templates*
  - *Implementing and Optimizing ArcGIS Server Map Caches*
  - *Building Rich Internet Applications with ArcGIS API for Flex*
  - *Building Mashups using the ArcGIS JavaScript APIs*

- **Instructor-led training courses**
  - *Introduction to ArcGIS Server*
  - *ArcGIS Server: Web Administration Using the Microsoft .NET Framework*
  - *Building Web Maps Using the ArcGIS API for JavaScript*

Questions?

Thank you